Respiratory Medicine (2001) **95,** 90–91
doi:10.1053/rmed.2000.1011, available online at http://www.idealibrary.com on IDEAL®

Short Report

What time of day do patients take steroid tablets?

M. R. Partridge, J. S. L. Partridge, M. Rooney and T. Kava

The Chest Clinic, Whipps Cross Hospital, London, E11 1NR, U.K.

Introduction

Expert advice is that those taking systemic corticosteroids should take the tablets in the morning to reduce the risk of suppression of the hypothalamo-pituitary–adrenal (HPA) axis (1,2). Systemic steroid administration in the evening is more likely to cause clinically significant HPA suppression (3). For some years printed advice to patients attending this chest clinic under the care of one of the consultants has advised the morning use of tablets, but we decided to survey how patients attending this chest clinic and a rheumatology clinic in the same hospital actually used their tablets.

Methods

For a 2 month period a poster and a supply of questionnaires was placed prominently in the three waiting rooms in the chest clinic. The poster invited patients who had ever been given steroid tablets to complete one of the questionnaires and hand it to the reception staff. Over the same time period, our respiratory nurse specialists offered the questionnaire to patients who had used steroid tablets, and a nurse specialist in a rheumatology clinic similarly asked appropriate patients to complete the questionnaire. The aim was to obtain a response from 50 patients with rheumatological conditions, and as many as possible completed forms from chest clinic patients. The questionnaire was designed to capture information on diagnosis, the number of steroid courses taken in the last 10 years and how the patients took the tablets. A number of options regarding different methods of taking oral steroids were offered, and patients were asked to circle the option which was most similar to their practice. They were also asked about the advice they had received from doctors about oral steroid administration, and whether they had received written instructions.

Results

A total of 151 questionnaires were completed by patients reporting use of steroid tablets. Sixty-one (40%) were completed by patients attending the rheumatology clinic and 90 (60%) by those attending the chest clinic. The two biggest indications for tablet steroid therapy were rheumatoid arthritis [48 patients (32%)] and asthma [43 patients (29%)], but the range of conditions included chronic obstructive pulmonary disease, fibrosing alveolitis, sarcoidosis, polymyalgia rheumatica, systemic lupus erythematosis, malignancy, Bechets syndrome and Wegeners.

Fifty-two of the patients (34%) were on continuous steroids; 25 for rheumatological conditions (48%). Fifty-eight of the patients had had less than five courses of steroids previously (38%), 15 (10%) had had between five and 10 courses of steroids previously and 12 (8%) had had more than 10 previous treatment courses with steroid tablets.

Ninety-seven of the patients (64%) reported taking all of their tablets in the morning, 16 (11%) reported taking tablets in the morning, at lunchtime and at bedtime, 13 (9%) said they took their tablets in the morning and at bedtime; nine (6%) took them in the morning, in the afternoon and at teatime. Four patients (3%) took the tablets in the middle of the afternoon and five of the patients (3%) said that they took all of their tablets at bedtime. Two patients did not answer this question and four described some way of taking their medication other than in the morning. No different patterns of use were discernible between diseases and between those on regular steroids and intermittent users.

One hundred and four patients (69%) reported that they had received verbal instructions as to when to take the tablets and these were equally distributed amongst rheumatology and chest clinic patients. Only 49 patients (33%) said that they had received written instructions. The advice most commonly reported being received was ‘all together at breakfast’ or ‘in the morning’.

Discussion

With any prescription the prime consideration is to gain maximum benefit with minimal side-effects. With systemic steroid therapy the potential for adverse endocrinological effects seems to be less if the steroids are taken in the early morning. Morning use coincides with peak diurnal ACTH levels and this results in significantly less adrenal suppression than when steroids are taken in divided doses or at bedtime. Standard advice to take steroid tablets in the morning is therefore based on a principle of dosing for

Received 1 November 2000 and accepted 2 November 2000.
Correspondence should be addressed to: Martyn Partridge, The Chest Clinic, Whipps Cross Hospital, Whipps Cross Road, London, Ell lNR, U.K. Fax:+44 020 8 535 6709; E mail: mrp@wxhchest.demon.co.uk

0954-6111/01/010090+02 $35·00/0

minimal side effects. However this may not be the time of day when therapeutic efficacy is maximal and less is known regarding the diurnal therapeutic ratio—i.e. the time of day at which the ratio between desired and undesired effects is optimal. With regards to asthma there is some suggestion that once daily inhaled steroid therapy may be more effective if taken in the evening (4), and there is some evidence that oral steroids taken in the afternoon may be best for those with severe night-time asthma (5). Until we have a better understanding of diurnal variation in therapeutic ratios, expert advice (1) and standard asthma textbooks (6,7) advise dosing to minimize side-effects and the morning use of steroid tablets.

In this study a third of patients did what might seem logical in the absence of instructions and spread the tablet taking throughout the day, or took them specifically at a time other than the morning. Numerous studies have highlighted how recall of the spoken word is poor, and yet only one third of patients reported that they had received written instructions. To avoid unnecessary side-effects, patients being treated with steroid tablets for most conditions should be given spoken and written instructions to take all of their medication in the morning.

Acknowledgements

We are grateful to Dr D.V. Doyle for permission to study his patients.

References

1. Committee on Safety of Medicines/Medicines Control Agency. Current problems in pharmacovigilance. *Focus on Corticosteroids*. 1998; **24:** 5–8.
2. Nesbitt LT. Minimizing complications from systemic glucorticosteroid use. *Dermatol Clin* 1995; **13:** 925–939.
3. Grant S, Forsham P, Diraimondo V. Suppression of 17 Hydroxycorticosteroids in plasma by single and divided doses of triamcinolone. *New Engl J Med* 1965; **273:** 1115–1118.
4. Noonan M, Bronsky EA, Ramsdell JW, William Bensch G, Lutsky BN & C96-196 Study Group. Once-daily Mometasone Furoate (MF) improves FEV_1 and AM PEFR to the same extent as twice-daily MF in patients with moderate persistent asthma. *Eur Respir J* 1999; **14:** 1s.
5. Beam WR, Ballard RD, Martin RJ. Spectrum of corticosteroid sensitivity in nocturnal asthma. *Am Rev Respir Dis* 1992; **145:** 1082–1986.
6. Barnes PJ. Chapter 40 'Glucocorticosteroids'. In *Asthma—Basic Mechanisms and Clinical Management*. Third Edition. Barnes PJ, Rodger IW, Thomson GC, ed. Pub. London: Academic Press, 1998.
7. Chung KF, Clark TJH. Chapter 14 'Corticosteroids' In *Asthma*, Third Edition. Clark TJH, Godfrey S, Lee TH, Ed. Pub. London: Chapman and Hall Medical, 1992.